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Addressing *Vulnerability and Adaption* to Climate Change Impacts in SEPA Review—Concept and Proposed Recommendations

Authors: Annie Szvetecz and T.C. Richmond; **Discussants/Reviewers:** Michael Robinson-Dorn and Jim Lopez

In the simplest view of SEPA and Climate Change, SEPA addresses the impacts of a proposed action on the environment through GHG emissions. The climate changes that are predicted to occur create vulnerabilities and the need for adaptations that form a second tier of impacts to be addressed by SEPA. This recommendation focuses on the later through analysis of how predicted changes in the existing environment combined with the proposed actions will create additional consequences to the natural and built environment.

Background

Decisions made today can shape future vulnerability to a variety of stresses, including climate change. An examination of the possible futures impacted by climate change provides valuable information that can be used to inform planning and project-level decisions. The level of analysis will depend in part on the sensitivity of a resource to variations in climate and the risks associated with those changes. For example, on the plan-level, the implications of increased drought in a river system serving as the primary water source for a dense metropolitan area may be much greater than for a similarly sized river with few demands placed on it. On the project-level, the implications of climate change are greater in a decision to site a building within a coastal shoreline than in a upland area.

When relatively little is at stake, project applicants and lead agencies may want to choose to analyze climate change scenarios assuming the least amount of global warming (i.e., best case scenarios) for evaluating specific climate impacts. When there is more at stake, or when climate impacts could have irreversible ecosystem consequences, resource managers may want to assume greater global warming (i.e., worst-case) scenarios. The appropriateness of any one model and/or climate scenario for assessing climate impacts should be evaluated on a case-by-case basis depending on the nature of the study and the nature of risk.

What about uncertainty? Continued research on the global climate system and Washington's environment will continue to expand our understanding of climate change impacts. The absence of "perfect information" should not, however, prevent planning for climate change. SEPA requires the consideration of impacts that are not speculative and provides exceptions for information gaps. Good decisions can be made in spite of the uncertainty associated with

projected changes, just as good decisions are made in spite of uncertainty about other factors, such as future economic conditions or rates of population growth. Careful consideration of the range of projected climate impacts, combined with an analysis of a resource's vulnerability to these impacts, will support the appropriate level of review of climate change impacts of a proposal and result in better agencies decisions.

Proposed SEPA IWG Recommendations:

1. The state and local governments should continue to fund and synthesize research into the anticipated regional effects of climate change.

2. Ecology and other agencies should provide guidance on how to evaluate and mitigate the adverse affects of global warming as part of SEPA review.

3. Ecology should amend the SEPA checklist to require analysis of the vulnerability to climate changes of the proposed action, future adaptations that may be required to address those vulnerabilities and the impacts of those adaptations. Key resources and sectors to be addressed are:[1]

    - Water Availability (changes in participation patterns)
    - Water Quality (particularly temperature)
    - Urban Infrastructure (particularly due to Stormwater Runoff)
    - Energy Supply and Demand (due to water supply and temperature rise)
    - Forests (health, productivity, fires, diversity)
    - Agriculture (particularly irrigated and dryland areas)
    - Air Quality (increased ozone, particulates, allergens)
    - Impacts due to Extreme Weather Events (flooding, windstorms, droughts, heat waves)
    - Coastlines (direct and indirect impacts from sea level rise)

[1] This list is drawn from *Summary of Regional Impacts of 21st Century Climate Change* (from February 2008 CAT Interim Report)